UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 57502

CSAH NO. 24

OVER THE

RED LAKE RIVER

DISTRICT 2 - PENNINGTON COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 163)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge 57502, Piers 1 and 2, were in good condition with no defects of structural significance observed. The channel bottom appeared to be in stable condition with no evidence of significant scour or appreciable changes since the previous inspection.

INSPECTION FINDINGS:

(A) A light to moderate accumulation of timber debris was observed at the upstream end of Pier 1, extending from 3 feet below the waterline to the channel bottom, with drift having a maximum diameter of 6 inches.

(B) A light to moderate accumulation of grass and branches was observed at the upstream end of Pier 2, extending from the waterline to the channel bottom.

(C) An area of poorly consolidated concrete was observed at the upstream end of Pier 1 near the waterline, measuring 2 feet wide by 1 foot high with 1/4 inch of penetration.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 57502

Feature Crossed: The Red Lake River

Feature Carried: CSAH No. 24

Location: District 2 - Pennington County

Bridge Description: The superstructure consists of three spans of multiple steel beams supporting a reinforced concrete deck. The superstructure is supported by two concrete abutments and two concrete piers, with the piers numbered 1 and 2 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg
State of Minnesota, P.E., No. 21491

Dive Team: Michelle D. Koerbel, Matthew J. Lengyel

Date: August 26, 2002

Weather Conditions: Cloudy, ± 80^{o} F

Underwater Visibility: ± 2.0 Feet

Waterway Velocity: ± 2.0 fps

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2

General Shape: The piers consist of an oblong rectangular concrete shaft with rounded noses supporting a hammerhead pier cap. Design plans with foundation information were not obtained.

Maximum Water Depth at Substructure Inspected: Approximately 7.5 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap on the west side of Pier 2.

Water Surface: The waterline was approximately 7.4 feet below reference.
Assumed Waterline Elevation = 92.6.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

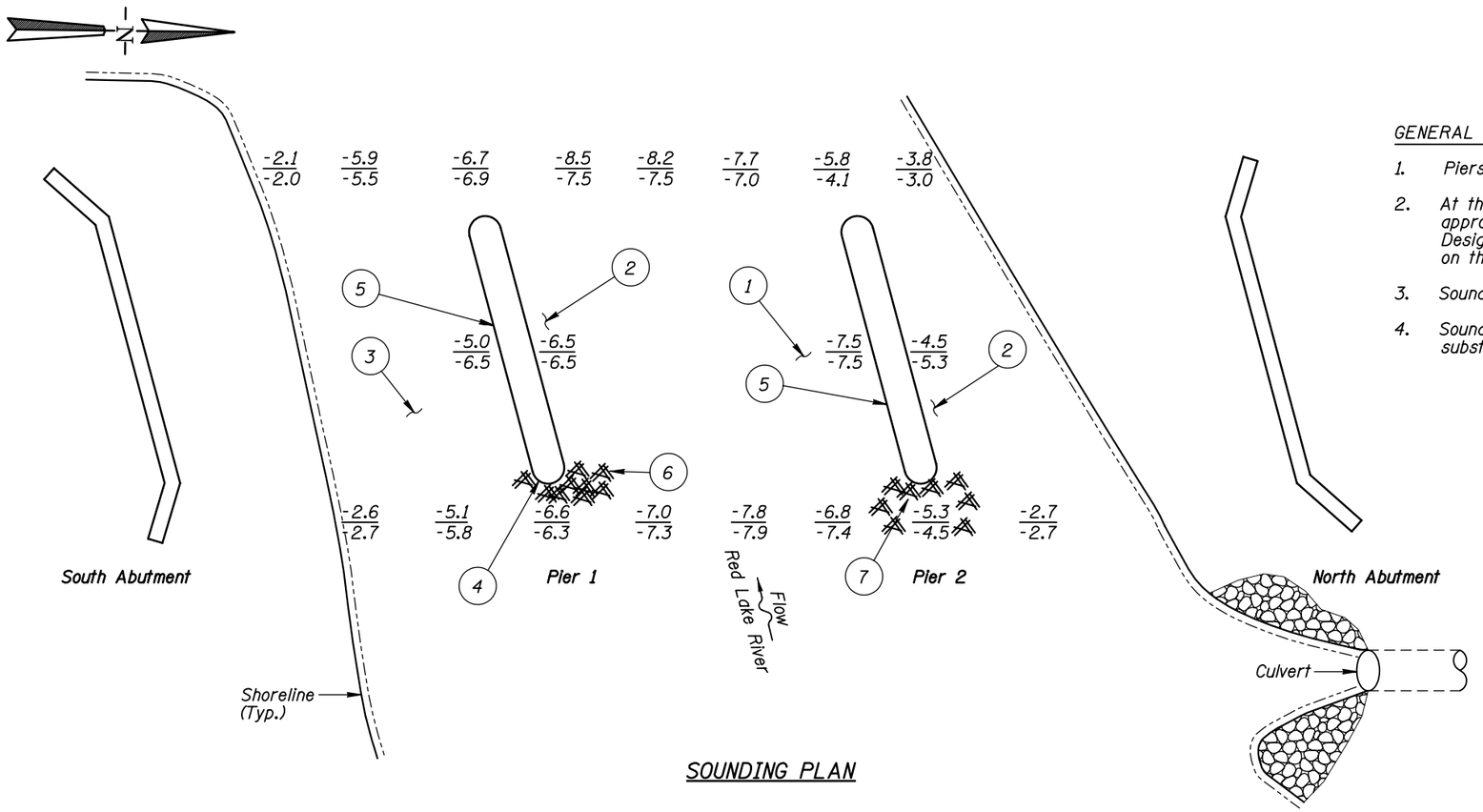
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/08/02

Item 113: Scour Critical Bridges: Code I/94

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes __X__ No



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on August 26, 2002 the waterline was located approximately 7.4 feet below the top of the pier cap on the downstream end of Pier 2. Design plans were not available, therefore a reference of 100.0 was assumed. Based on the assumed reference the waterline elevation was 92.6.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

TYPICAL END VIEW OF PIERS

INSPECTION NOTES:

(1) The channel bottom material around Pier 2 consisted of gravel and 3 to 6 inch cobbles with 4 inches of maximum probe rod penetration.

(2) The channel bottom material around Pier 1 consisted of fine sand with 12 inches of maximum probe rod penetration.

(3) The channel bottom material between the South Abutment and Pier 1 consisted of fine sand and scattered riprap.

(4) Area of poorly consolidated concrete at the upstream nose of Pier 1 near the waterline, measuring 2 feet wide by 1 foot high with 1/4 inch of penetration.

(5) The concrete was generally in good and sound condition with random popouts observed on the faces of both piers.

(6) Light to moderate timber and organic debris with branches measuring up to 6 inches in diameter were observed from 3 feet below the waterline to the mudline and extended 4 feet out from the upstream nose of Pier 1.

(7) Light to moderate timber and organic debris was observed from the waterline to the mudline and extended 5 feet out from the upstream nose of Pier 2.

Legend

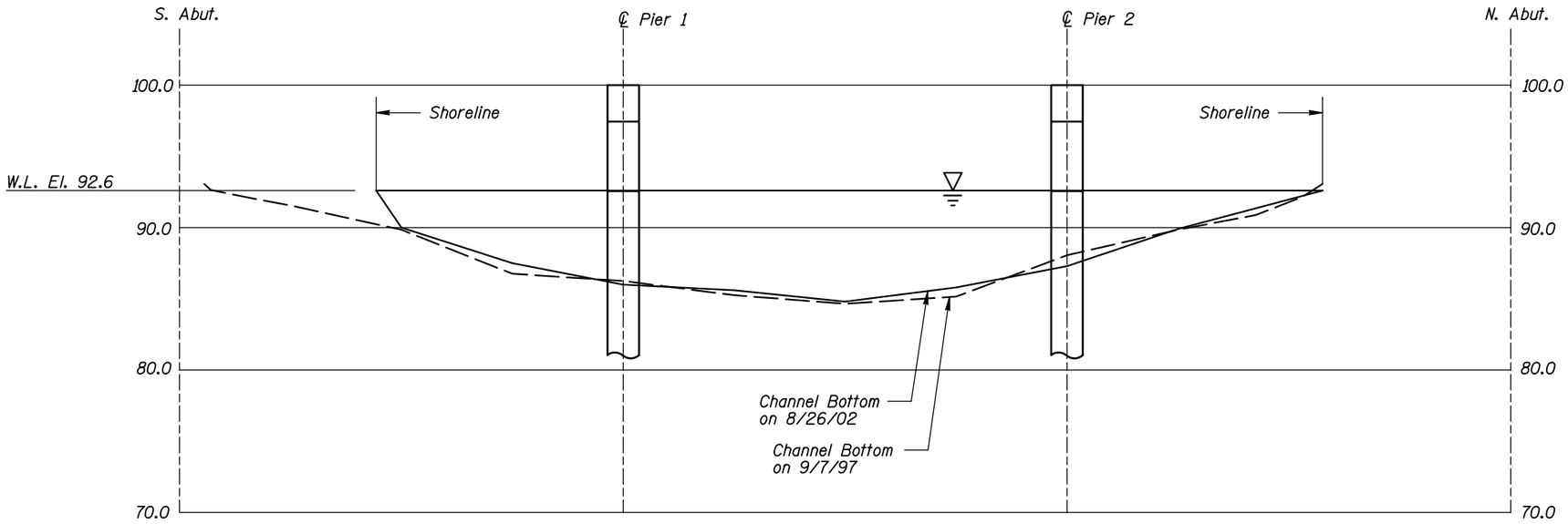
-2.0	Sounding Depth from Waterline (8/26/02)
-5.2	Sounding Depth from Waterline (9/7/97)
	Timber Debris
	Riprap

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 57502
OVER THE RED LAKE RIVER
DISTRICT 2, PENNINGTON COUNTY

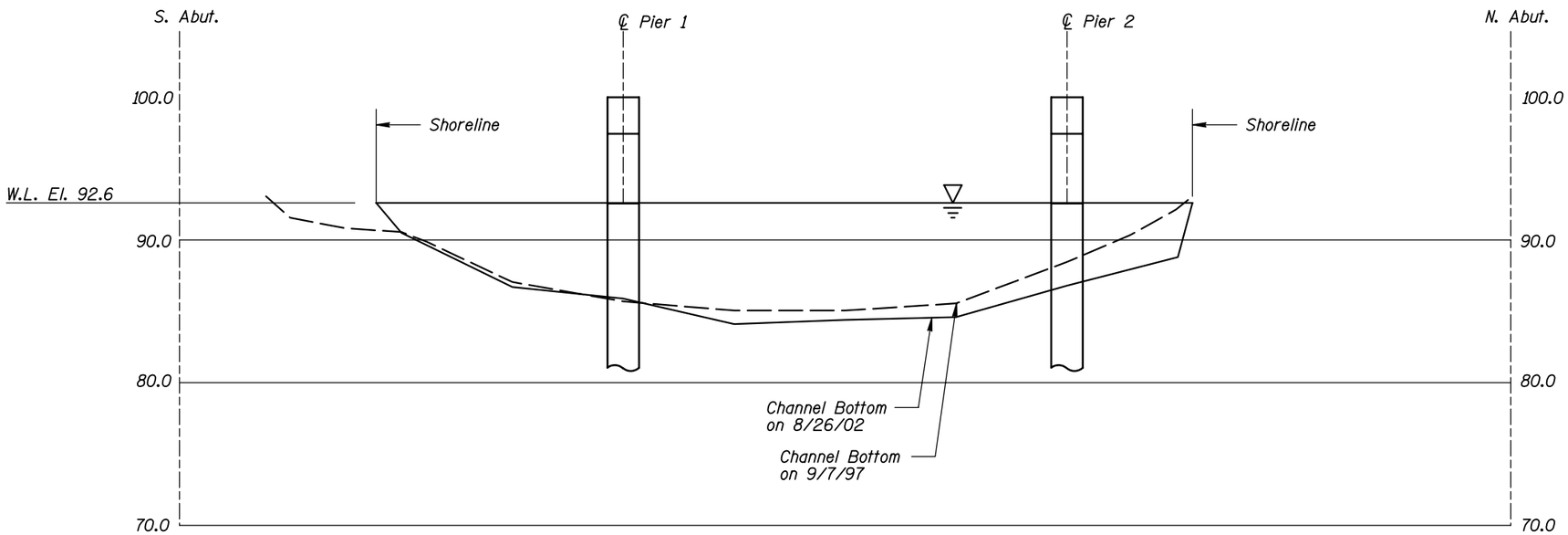
INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: AUG. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120163		Figure No.: 1



UPSTREAM FASCIA PROFILE

Vertical Scale: 1"=10'-0"



DOWNSTREAM FASCIA PROFILE

Vertical Scale: 1"=10'-0"

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: AUG. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS (U.O.N.)
Code: 35120163		Figure No.: 2

Photograph 1. Overall View of the Structure, Looking Northeast.

Photograph 2. View of Pier 1, Looking Northeast.

Photograph 3. View of Pier 2, Looking Northeast.

Photograph 4. View of Debris at Pier 2, Looking West.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 26, 2002
ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E.
BRIDGE NO: 57502 WEATHER: Cloudy, ± 80° F
WATERWAY CROSSED: The Red Lake River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER
PERSONNEL: Michelle D. Koerbel, Matthew J. Lengyel
EQUIPMENT: Scuba, U/W Light, Scraper, Sounding Pole, Lead Line, Probe Rod, Camera
TIME IN WATER: 3:35 P.M.
TIME OUT OF WATER: 4:10 P.M.
WATERWAY DATA: VELOCITY " 2.0 fps
VISIBILITY " 2.0 Feet
DEPTH 7.5 Feet maximum at Pier 2.
ELEMENTS INSPECTED: Pier 1 and Pier 2
REMARKS: The concrete of the piers was found to be in good condition below water with no significant defects present. Above water there were minor defects observed including random popouts and one area of poorly consolidated concrete. The channel bottom appeared stable with no evidence of scour. Light to moderate timber and organic debris was present at the upstream nose of both piers.

FURTHER ACTION NEEDED: _____ YES __X____ NO

Monitor drift for increases in amount of accumulation during future inspections.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 57502
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E. 21491
WATERWAY CROSSED The Red Lake River

INSPECTION DATE August 26, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	6.7’	N	7	N	9	N	7	8	N	N	6	7	7	N	N	8	N	N
	Pier 2	7.5’	N	7	N	9	N	7	8	N	N	6	7	7	N	N	8	N	N

*UNDERWATER PORTION ONLY

REMARKS: The concrete of the piers was found to be in good condition below water with no significant defects present. Above water there were minor defects observed including random popouts and one area of poorly consolidated concrete. The channel bottom appeared stable with no evidence of scour. Light to moderate timber and organic debris was present at the upstream nose of both piers.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.